

### REMARKS

Claims 2, 4 – 7, 9 – 31, 40 – 42, 44 and 46 are pending. Of those claims, 19 – 21 and 29 – 31 were allowed in the Office Action. Accordingly, three independent claims and their corresponding dependent claims are presented for reconsideration, namely, independent claim 46 (which replaces claim 1), together with dependent claims 2, 4 – 7 and 9 – 14; independent claim 15, together with dependent claims 14 – 18 and 25 – 28; and independent claim 40, together with its dependent claims 22 – 24, 41, 42 and 44.

Applicants thank the Examiner for the Interview granted to applicants' attorney. In view of matters presented and discussed at the Interview, and the amendments and remarks herein, reconsideration and allowance of the application are respectfully requested.

As a preliminary matter, the specification has been amended as discussed with the Examiner to add the sentence at paragraph [033] on page 10. As acknowledged by the Examiner in the Interview, this is not new matter and is clearly supported by the drawings and the disclosure, for example the other description contained in paragraph [033] taken in context.

In the Office Action the independent claims 1, 15 and 40, with their dependent claims, were principally rejected<sup>1</sup> under 35 U.S.C. § 103(a) as obvious over U. S. Patent No. 5,912,470 to Eibofner et al. (hereinafter "Eibofner"),<sup>2</sup> or as obvious over U. S. Patent No. 5,013,240 to Bailey et al. (hereinafter "Bailey") taken in combination with U. S. Patent No. 5,634,711 to Kennedy et al. (hereinafter "Kennedy"),<sup>3</sup> or as obvious over U. S. Patent No. 6,102,696 to Osterwalder et al. (hereinafter "Osterwalder").<sup>4</sup>

Eibofner illustrates and describes a light-curing device that is generally shaped like a gun. The light source is a halogen lamp with an integral reflector 6 located within the center of the device. "The light emitted by the incandescent halogen lamp 2 is guided by the reflector 6 through a filter system 7 and focused onto the incident surface of the optical light guide system."

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<sup>1</sup> The Examiner also made reference to certain objections as to inferentially claimed subject matter (for example, p. 2, "the inferentially claimed holding slot," and p. 4, "As to claims 25 -27, the size and shape with respect to other inferentially claimed hand pieces . . ."). As discussed at the Interview, this objection would technically constitute grounds for rejection under 35 U.S.C. § 112, par. 2, for not positively reciting that subject matter. However, the Examiner acknowledged that the form of the claims as presented and discussed for claims 15, 40 and 46 satisfactorily resolved this objection and thereby removing such further grounds for rejection.

<sup>2</sup> E.g., claims 1, 2 – 5, and 22 – 24.

<sup>3</sup> E.g., claims 15 – 18 and 25 – 28.

<sup>4</sup> E.g., claims 40 – 42, 44 and 45.

Col. 2, lines 52 – 55. Eibofner also includes within the gun a fan 8, and shows (see Fig. 1) what also appears to be a transformer for providing power to the halogen lamp 2.<sup>5</sup>

Eiboffner is generally illustrative of the typical prior art type curing devices described by applicants in the background of the specification:

“Many light-curing devices are configured with a fiber optic light guide for directing light from a light source into a patient’s mouth. The light source may comprise, for example, . . . a halogen bulb . . . . [T]he light emitted from the light source will be directed into and captured by the light guide. One problem with light guides, however, is that they are relatively heavy and can significantly increase the weight of the light-curing device. . . .

Light guides and integrated power supply units also add bulk to the light-curing devices, thereby increasing the difficulty of gripping and manipulating the light-curing devices by hand.” Pages 2 – 3.

The primary reference to Bailey discloses a portable dental apparatus (see Fig. 9) in the nature of a portable console for carrying a variety of dental tools as well as providing power for the tools. The relevant disclosure of Bailey shows either “light curing wand 30” (Fig. 2) that is “connected by fiber optics to a source of light energy within the main housing” of the portable console (Col. 7, lines 31 – 33), or as an alternative, a “light curing unit 131” that is a gun-type device similar in its appearance to that of Eibofner (Fig. 9).

The secondary reference (Kennedy) illustrates and describes a hand-held light emitting apparatus suitable for medical and industrial photocuring. The device includes a main enclosure 12 (see Fig. 1) which houses an array<sup>14</sup> of LEDs mounted to a heat sink 26. The main enclosure 12 also houses a fan 27 and a battery supply 21. An optical assembly 18 includes a fiber optic taper 34 that “serves to condense the light output from the LED array 14 into a condensed beam 36” that is then transmitted through a fiber optic light guide 38 that “further collimates and focuses the beam 36” as it is transmitted by the light guide 38 to the point of application. Col 4, lines 21 – 29.

As claimed, applicants have defined an improved dental device (e.g. claims 15 and 40) adapted for a system that includes a holding tray comprising one or more recesses, at least one of which is for receiving a dental device used in curing light-curable compounds, so as to hold the dental device in a convenient, generally upright fashion for easy grasping, and a remote power

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<sup>5</sup> Eibofner also discloses that “For the supply of energy there is located in the manual unit a power pack 12, which is connected to an external mains supply via a cable or which comprise batteries. . .” Col. 3, lines 17 – 19.

supply for providing power to the dental device. The improved dental device is comprised of a light-weight, hand-held elongated and slender body extending between a proximal end and a distal end, wherein the proximal end of the body is configured to securely fit into the at least one recess of the holding tray. The device also includes a light source disposed at the distal end of the body, which emits light suitable for curing light-curable compounds. The light source and distal end of the body together comprise a configuration in size and shape that enables them to be inserted and rotated within the mouth of a patient for direct application of the curing light within the patient's mouth, so as to eliminate any need for a light guide to direct the curing light. The dental device is connected to the remotely located power supply by a power cord extending from the proximal end of the body.<sup>6</sup>

New claim 46 similarly claims, using functional limitations, a relatively light weight, hand-held dental device for curing light-curable compounds, and that is adapted for use in a system that includes a holding tray comprising one or more recesses, at least one of which is for receiving the dental device so as to hold the dental device in a convenient, generally upright fashion for easy grasping, and a remote power supply for providing power to the dental device. As claimed, the dental device comprises a means for defining a generally elongated, light-weight, slender body for enabling the dental device to be held and easily rotated into various positions when using a distal end of the dental device for curing procedures in a patient's mouth. The claimed device also includes a means, disposed at the distal end of the dental device, for emitting radiant energy directly to a light-curable compound within a patient's mouth. A means, disposed at a proximal end of the dental device, also provides a fit that adapts the dental device for securely sitting in an essentially elongated, upright fashion within the at least one recess of the holding tray when it is not in use. A power cord extends from the body means and adapts the dental device for operable connection with the remotely located power supply.

It is clear that Eibofner, Bailey and Kennedy do not teach, either singly or in combination with any prior art of record, a light source disposed at the distal end of an elongated, slender body (e.g., claims 15, 40 and 46) and configured to directly emit light at the point of application within a patient's mouth, as contrasted for example with transmitting the light through a light

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<sup>6</sup> Claim 40 claims, in addition, an LED light source, a heat sink in contact with the LED light source, and a transilluminating lens removably attached to the distal end of the device .

guide as those references teach. Indeed, in that respect applicants' claimed dental device is contrary to the teachings of those references.

Those references also teach bulky, gun-type curing light devices, and/or devices that in addition to using light guides, require fans, batteries and the like which add to the bulk and make the devices less useful for dental curing applications.

With respect to Osterwalder, that reference discloses "a self contained" dental curing light apparatus (see Figs. 1 – 4). Indeed, the self contained feature of the apparatus is described by Osterwalder as an important feature of the invention,<sup>7</sup> in that the handle of the device includes battery 28 so there is no external connection to any remote power supply. Nor is there any mention or reference to a proximal end that securely fits into a holding tray with a recess for receiving and holding the device in a generally elongated, upright fashion for easy grasping. Indeed, in that sense Osterwalder has no need to be held in holding tray when not in use, because of the absence of the external wiring for connection to a remote power source. In other words, since the Osterwalder is "self contained" with the batteries in the handle, it can be simply placed on a counter or any surface, and hence needs no holding tray as in the case of a light curing device connected to an external power source. Thus, Osterwalder is also contrary to applicants' claimed invention in this sense.

In summary, the references of record do not anticipate or make obvious, either singly or in combination, the dental device as claimed in independent claims 15, 40 and 46, and their corresponding dependent claims. Applicants claimed dental device eliminates the need for using a light guide to transmit the light to the point of application inside of a patient's mouth, while at the same time insuring that the device is light weight by using a connection to a remote power source. As noted during the Interview, the proposed amendments presented and discussed were viewed as being "favorably . . . directed at overcoming the use of a light guide and of overcoming a self contained light curing device." Interview Summary.

Independent claims 15, 40 and 46, as noted in the preceding remarks, are consistent with the discussion had at the Interview and, for at least the reasons noted, are patentable over the prior art of record. Favorable reconsideration is thus requested.

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<sup>7</sup> "Another object is to provide an entirely self contained dental resin curing apparatus having no external wiring or other connections." Col. 2, lines 58 – 60.

In the event the Examiner finds any remaining impediment to allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney.

Dated this 26th day of May, 2004.

Respectfully submitted,

A handwritten signature in black ink, reading "Rick D. Nydegger". The signature is written in a cursive, flowing style with a large initial "R".

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